



Solicitation and Sexualized Interactions of Minors with Adults: Prevalence, Overlap with Other Forms of Cybervictimization, and Relationship with Quality of Life

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A B S T R A C T

Sexual solicitation and sexualized interaction with minors by adults constitute one of the most pernicious risks of the Internet. Little is known about the age range in which this phenomenon is most prevalent or the relationship and overlap of this problem with other risks, such as peer-to-peer cybervictimization and cyber dating abuse. Additionally, little empirical evidence exists on whether the overlap between these types of online victimization affects health-related quality of life (HRQoL). This study aimed to: 1) analyze the prevalence of sexual solicitation and interaction according to sex and stage of adolescence; 2) relate this problem to other forms of online victimization (cybervictimization and cyber dating abuse); 3) analyze the overlap between these forms of online victimization and differences in HRQoL scores. A cross-sectional and analytical study with 3,578 adolescents (52.7% girls) aged between 10-15 years was carried out. Of the adolescents in the study sample, 12.6% ($n = 448$) had received sexual requests and 6.4% ($n = 230$) had interacted sexually with adults. Sexual solicitation was most common among girls in middle adolescence. Of the participants, 33.9% ($n = 1,216$) had been involved in some form of online victimization. Peer cybervictimization and cyber dating abuse were positively and significantly correlated with sexualized solicitation/interactions with adults. Victims with the overlapping of all three types of online victimization (2.7%, $n = 98$) presented the lowest HQRoL scores ($p < .001$).

La solicitud sexual y las interacciones sexualizadas de menores con adultos: su prevalencia, solapamiento con otras formas de cibervictimización y relación con la calidad de vida

R E S U M E N

La solicitud e interacción sexual con menores por parte de adultos constituyen uno de los riesgos más perniciosos de Internet. Se sabe poco sobre la franja de edad en el que es más frecuente o sobre la relación y el solapamiento de este problema con otros riesgos, como la cibervictimización entre iguales y el abuso online en la pareja. Además, existen pocas evidencias empíricas sobre si el solapamiento entre estos tipos de victimización afecta a la calidad de vida relacionada con la salud (CVRS). Los objetivos de este estudio fueron: 1) analizar la prevalencia de la solicitud/interacción sexual en función del sexo y la etapa de la adolescencia, 2) relacionar esta problemática con la cibervictimización entre iguales y el abuso online en la pareja, 3) analizar el solapamiento entre estas formas de victimización online y sus diferencias en las puntuaciones de CVRS. Se trata de un estudio transversal y analítico con 3,578 adolescentes (52.7% chicas) entre 10-15 años. El 12.6% ($n = 448$) habían recibido solicitudes sexuales y el 6.4% ($n = 230$) había interactuado sexualmente con adultos. La solicitud sexual fue más frecuente en chicas en la adolescencia media. Un 33.9% ($n = 1,216$) había sufrido algún tipo de victimización online. La cibervictimización entre iguales y el abuso online en la pareja correlacionaron positiva y significativamente con solicitudes/interacciones sexualizadas con adultos. Las víctimas que solaparon los tres tipos de victimización online (2.7%, $n = 98$) presentaron las puntuaciones de CVRS más bajas ($p < .001$).

Palabras clave:

Solicitud sexual
Interacción sexual
Cibervictimización
Abuso online en la pareja
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The massive use of the Internet has enabled alternative forms of communication and interaction among adolescents. According to the Spanish National Statistics Report, 95.1% of children aged 10-15 years old have used the Internet in the last three months, and 68.7% own a mobile device (Instituto Nacional de Estadística [INE, 2021]). In addition, Spanish teenagers aged between 12 and 17 years spend an annual average of 1,058 hours connected to the Internet (Quostodio, 2019). This widespread use of Relationship, Information, and Communication Technologies (RICT) has significant advantages but also specific risks that concern society, such as solicitation and/or sexual interactions of minors with adults (Andrade et al., 2021). Although there are multiple Internet risks, this problem is considered one of the most pernicious in the online context because it places the child in a situation of vulnerability and defenselessness due to its asymmetry caused by an adult (Madigan et al., 2018; Stoilova et al., 2021) and can lead to severe psychosocial problems (Festl et al., 2019).

Sexual solicitation refers to online requests by adults aimed at minors to engage in sexual activities or conversations or give personal sexual information (Mitchell et al., 2007). Sexualized interactions refer to the process of interaction for sexual purposes that occurs on the Internet between an adult and a minor (Gámez-Guadix & Mateos-Pérez, 2019; Ortega-Barón et al., 2022). Sometimes, these requests and interactions are part of a process, called online child grooming that includes the recruitment, seduction, and manipulation by an adult who develops a feeling of attachment and intimacy with the minor, hiding primarily sexual intentions (Gámez-Guadix, De Santisteban, et al., 2021; Kloess et al., 2019). Although the solicitations and interactions of an adult targeting a minor sometimes occur sporadically and do not present continuity, some longitudinal studies show their stability over time (Calvete et al., 2021; Ortega-Barón et al., 2022).

The prevalence of this type of online sexual behavior varies depending on the studies and the cultural context. According to the meta-analysis of Madigan et al. (2018), 11.5% of minors (12-16 year-olds) received sexual requests in the online context. In addition, according to the study of Longobardi et al. (2021), 14% of adolescents between 11 and 14 years claim to have been a victim of online sexual harassment by an adult. Greene-Colozzi et al. (2020) noted that as minors, 23% of the participants in their study remembered having long and intimate conversations with unknown adults. Furthermore Hornor et al. (2022) observed that 20% of minors between 8 and 18 years old reported online sexual solicitation from individuals they had not met offline; 10.2% reported the highest-risk behaviors, including meeting and having sex with online acquaintances in real life. In 2017, the U.S. Department of Justice released a report detailing the federal prosecution of child sexual exploitation cases, noting that from 2004 to 2013, 10% of offenses were for the production of child pornography (Adams & Flynn, 2017). This data clearly indicate that the use of the Internet has facilitated the sexual solicitation and sexual abuse of minors through technology.

In the Spanish context, a recent report indicated that one in ten adolescents had received a sexual proposal from an adult on the Internet (Andrade et al., 2021). Montiel et al. (2016) indicated that 9.6% of minors aged 12-13, and 17.3% of 14- to 15-years old received sexual solicitations from an adult, while Gámez-Guadix et al. (2017) indicated that 12.6% of minors reported sexual solicitations, and 7.9% sexualized interactions and Calvete et al. (2021) that the percentage of sexual solicitations varies between 13.9% and 17.8%. On the other hand, for sexual solicitations and interactions, Ortega-Barón et al. (2022) indicated that the period prevalence (in this case, the number of cases in the 13 months of the study) was 23% and 14%, respectively. In addition, in this time frame, the incidence (new cases at the time of the study) was 11.7% for sexual solicitation and 8.9% for sexualized interactions.

Regarding differences between sexes, most previous studies have indicated that girls experience a higher prevalence of solicitation and sexualized interactions with adults (Gámez-Guadix, Román, et al., 2021; Machimbarrena et al., 2018; Mitchell et al., 2007; Montiel et al., 2016; Ortega-Barón et al., 2022; Sklenarova et al., 2018; Wachs et al., 2016). According to de Santisteban and Gámez-Guadix (2017), 15.6% of girls and 9.3% of boys reported sexual solicitations, and 8.2% of girls and 7.4% of boys reported sexualized interactions with adults. Concerning age differences, studies show that, as the minors' age increases, so does the prevalence of sexual solicitation and sexualized interactions with adults (Andrade et al., 2021; de Santisteban & Gámez-Guadix, 2017; Montiel et al., 2016; Ortega-Barón et al., 2022). Specifically, Calvete et al. (2021) note that the increase is especially significant in the 12-13 to 14-15 age ranges, whereas Joleby et al. (2021) indicate a disproportionately large rate in 13 years old. In particular, Schulz et al. (2016) report that girls between 14-17 receive a higher number of solicitations and sexual interactions.

The disparity in the data may be due to the use of different measurement instruments, criteria, and ways of conceptualizing these phenomena (Bennett & O'Donohue, 2014). Hence, it is important to delimit this problem as one of the most sensitive and overwhelming for any minor. That is why, in Spain, the Organic Law 1/2015 (LO 1/2015), in article 183, criminalizes telematic sexual proposals through any information and communication technology by adults who establish online contact with minors under 16 years of age to maintain sexual contact or trick them into obtaining pornographic images. Thus, this study is framed within this legal context, focusing on children under 16 years of age.

In general, for more than a decade, there has been much discussion about online risks for children and the importance of the conceptualization and classification of these risks (Livingstone et al., 2011). According to Livingstone and Stoilova (2021), these risks can be analyzed in terms of relevant elements, such as inappropriate content, misleading marketing, dangerous contact, and inappropriate behavior. These two latter categories encompass the constructs analyzed in this manuscript, as they refer to any type of behavior that may be harmful or inappropriate for children or through which an adult may harm them. Other approaches underpin these problems using a common factor, such as the relational dimension and the inherent exposure to these risks that accompanies online relationships (González-Cabrera & Machimbarrena, 2022). The online risks that young people face are not stand-alone problems but rather overlapping and interconnected by their very nature and the medium through which they occur: the Internet. It is, therefore, important to consider online risks holistically as opposed to addressing them as isolated problems (Smahel et al., 2020). These aspects of co-occurrence or overlapping risks lead us to relate it to the concept of polyvictimization, as evidence suggests that the most widespread victimization experiences tend to accumulate in certain individuals and certain settings of both face-to-face (Price-Robertson et al., 2013) and online violence (González-Cabrera, Machimbarrena et al., 2021). The importance of a perspective of possible overlapping risks is related to cumulative risk models, which suggest that when a person experiences several problems concurrently, the propensity to develop a psychological disorder or problem increases over time and with the number of risks to which he or she is exposed (Evans et al., 2013). Thus, logic dictates that research related to Internet risks should not focus on a single problem but on a set of problems with a common nexus, as online reality is complex and multifaceted.

Relatedly, recent research in the Spanish context showed that 6.4% of adolescents presented risks of cyberbullying, cyber dating abuse, and online grooming concomitantly (Machimbarrena et al., 2018). Meanwhile, Calvete et al. (2020) found that 6.7% of adolescents experienced concurrent cyberbullying and cyber dating

abuse. However, in those two studies, the samples were older than 16 years, hindering their comparability to younger samples.

Numerous studies relate polyvictimization to internalizing (anxiety, depression, stress, somatizations, etc.) and externalizing variables (aggressiveness, inattention, criminal behavior, etc.) (Bryce & Collier, 2022; MacKenzie et al., 2011). Holistic approaches also evaluate the consequences of such victimization for quality of life (QoL), defined by the World Health Organization (WHO) as a person's perception of their objectives, expectations, standards, and concerns mediated by their cultural context and value system (Saxena & Orley, 1997). Despite a large number of definitions of QoL, health-related quality of life (HRQoL) presents a broader conceptualization, including objective indicators of health, perceived health, functioning, and impact on the main areas of daily activity (family, friends, and school). Although HRQoL in childhood and adolescence is a widely studied construct to determine a pathology's impact (Wallander & Koot, 2016), it has been less frequently analyzed in violence-related psychosocial problems. However, in recent years, some studies have been conducted on the impact in HRQoL of peer victimization (González-Cabrera, Montiel, et al., 2021), cyber dating abuse (Ortega-Barón et al., 2020), and sexual solicitations and interactions of adults with minors (Ortega-Barón et al., 2022). But these studies examine HRQoL separately with each risk and do not consider these problems concurrently.

Given these antecedents, the objectives of this study were: 1) to analyze the prevalence and differences in sexual solicitation and interaction scores according to the different age groups (12–13 years—early adolescence—and 14–15 years—middle adolescence), and the participants' sex; 2) to associate adults' sexual solicitations and interactions targeting minors with other forms of online victimization (peer cybervictimization and cyber dating abuse); 3) to analyze the overlap between these forms of online victimization; and 4) to compare HRQoL as a function of different categories of online victimization. The following research questions are posed concerning the first and third objectives: what is the prevalence of sexual solicitation and interaction with adults according to sex and age group – early adolescence (EA) and middle adolescence (MA)?; what is the prevalence of the overlap between this problem and peer cybervictimization and cyber dating abuse? Regarding the second and fourth objectives, two hypotheses are proposed: 1) associations will be found between all the cybervictimization variables analyzed (peer cybervictimization, cyber dating abuse, and adults' sexual solicitations and interactions targeting minors) (Calvete et al., 2021; Gámez-Guadix & Mateos-Pérez, 2019; Ortega-Barón et al., 2021); 2) minors who suffer two or three types of online victimization will present a significantly lower HRQoL than those who do not suffer any kind of victimization or only suffer one (Evans et al., 2013; González-Cabrera, Machimbarrena, et al., 2021).

Method

Design and Participants

This is a cross-sectional and analytical study conducted in 28 schools in eight Spanish regions (Castilla la Mancha, Castilla & León, Cantabria, Madrid, Valencia, Navarre, Basque Country, and Principality of Asturias). The sample comprised 3,578 participants (52.7% girls), whose mean age was 13.21 (10–15 years). The G*Power v.3.1.9.7 program (Faul et al., 2009) was used to determine the desired sample size with the appropriate values ($1 - \beta = .90$, $\alpha = .01$, and a small effect size [$f^2 = .01$]) for the analysis of variance. The results indicated that the minimum sample size should be 2,440 participants. Concerning age, following the taxonomy of Salmerá-Aro (2011), 10-to-13 year-old participants were included in the category of early adolescence (EA), with 2,147 (60%) participants

and 14-to-15 year-old participants were included in middle adolescence (MA), with 1,431 (40%) participants. Only minors under 16 years participated because Spanish law specifies an adult's solicitation and sexualized interactions with minors of this age as a crime. A convenience sample was used.

Assessment Instruments

Sociodemographic Data

Data such as sex, age, study center, type of study, and course, were collected. Additionally, the following questionnaires were used.

Questionnaire for Online Sexual Solicitation and Interaction of Minors with Adults (Gámez-Guadix et al., 2017). This scale evaluates, on the one hand, sexual solicitation from an adult received by a minor through 5 items (e.g., "I have been asked to have cybersex with an adult, e.g., via webcam") and, on the other hand, minors' sexualized interactions with adults through 5 items (e.g., "I have sent an adult photos or videos with sexual content of me"). These items are rated on a 4-point response format, ranging from 0 (*never*) to 3 (*6 or more times*). For the sexual solicitation and sexualized interaction dimensions, total score ranges from 0 to 15. Cronbach's alpha coefficient was .91 for sexual solicitation and .89 for sexualized interactions in this study.

The Cybervictimization Dimension of the Cyberbullying Triangulation Questionnaire (CBT) (González-Cabrera et al., 2019). The cybervictimization dimension of this questionnaire was used to assess cyberbullying victimization. This dimension consisted of 9 items that reflected the most common behaviors in cyberbullying (sending threatening messages or humiliating images, exclusion from groups, etc.). The responses to this Likert scale range from 0 (*never*) to 4 (*almost every week*), thus, the total score can vary between 0 and 36 points. Cronbach's alpha coefficient was .83 in this study.

Victimization Scale from the Cyber Dating Abuse Questionnaire (Borrajo et al., 2015). This scale evaluates the abuse received from the partner. Specifically, 11 items evaluate both forms of direct aggression received by the partner, such as receiving insults or threats through ICTs (e.g., "Sending insulting and/or demeaning messages using new technologies"), and the degree of control by the partner through technologies (e.g., "Using technologies to control where I am and with whom"). The items' responses on this Likert scale range from 0 (*never*) to 3 (*almost always*). Total score ranges between from 0 to 33. Cronbach's alpha coefficient was .90 in this study.

KIDSCREEN-10 (KD-10) for Children and Adolescents from 8 to 18 Years Old, Spanish Version. This questionnaire is conceptually based on the definition of HRQoL as a multidimensional construct encompassing the physical, emotional, mental, social, and behavioral components of well-being (The Kidscreen Group Europe, 2006). This version presents a single score as a global dimension of HRQoL through 10 items, which represent the participant's general assessment of their overall perception of HRQoL. The items are rated on a 5-point Likert scale, ranging from 1 (*never*) to 5 (*always*). It has adequate levels of reliability and internal validity and has been standardized for the Spanish population, providing a total score ranging from 10–50. Cronbach's alpha coefficient was .81 in this study.

Classification of Participants

The following criteria were applied to divide the study participants into victims and non-victims (by dichotomising the constructs). First, a minor was considered to be a victim of sexual solicitation or

sexualized interactions with an adult if they reported a score other than 0 (*never*) (that is, if they scored 1 or more in any item of the dimension), in line with other studies (de Santisteban & Gámez-Guadix, 2017; Machimbarrena et al., 2018; Ortega-Barón et al., 2022). This criterion is also aligned with the current Spanish penal code (Royal Decree 1/2015) and the classification of this type of behavior as a crime. Second, to dichotomize the variable cybervictimization as peer violence (cybervictim vs. non-cybervictim), participants who scored 2 (*often*) or more in any of the items were considered victims, a criterion that has also been used in other research (González-Cabrera et al., 2018; González-Cabrera et al., 2019). Lastly, for the variable victimization of cyber dating abuse, we followed the criteria used in previous studies (Lara, 2020; Ortega-Barón et al., 2020; Peskin et al., 2017) in which adolescents with scores equal to or greater than 1 (*sometimes, many times, and almost always*) in any of the items are considered victims of direct aggression and/or control by the partner.

The sum of these dichotomous values of victimization provided an aggregate metric of accumulation of the cybervictimization problems involved (Evans et al., 2013). The possible combinations of the three Internet risks are: solicitation and/or sexualized interaction with adults on the Internet (conjointly), peer cybervictimization, and cyber dating abuse. For each participant, polyvictimization was calculated by combining the number of issues in which a participant could be included. This led to 8 mutually exclusive subsets: (1) non-cyber victims (they do not present problems in any of the risks studied); 2) cybervictim of solicitation and sexualized interaction with adults; 3) cybervictim of peer violence; 4) cybervictim of cyber dating abuse; 5) solicitation and sexualized interaction with adults and peer cybervictimization; 6) solicitation and sexualized interaction with adults and cyber dating abuse; 7) peer cybervictimization and cyber dating abuse; 8) solicitation and sexualized interaction with adults, peer cybervictimization, and cyber dating abuse.

Procedure

All of the students from the 28 centers that participated in the study were contacted by the end of the 2020/2021 academic year. All of the students' legal guardians were informed of the purpose of the study by means of an informed consent form. The questionnaire battery was applied online during two months through the Survey Monkey © platform during school hours. Control mechanisms, such as a minimum and maximum response time and control questions, were enabled for the online assessments. Violation of these mechanisms was sufficient grounds for the rejection of participants (Niessen et al., 2016). A total of 3,708 participants

completed the questionnaires. Those who did not complete them correctly ($n = 130$) were eliminated from the study. Participants completed the questionnaires in their schools, during school hours, using mobile devices or computers in computer rooms, coordinated by the guidance departments and under the tutors' supervision. The time needed to complete the questionnaires ranged from 10 to 20 minutes, depending on students' age and reading comprehension.

Ethical Considerations

The study was conducted with the consent of the participants, legal guardians and the directors of the schools. Approximately 1% of families declined to participate in the study. Participation was anonymous, disinterested, and voluntary. This study was approved by the Research Ethics Committee of the Universidad Internacional de La Rioja (PI004_2019, PI025_2020, PI001_2021). There were no exclusion criteria except for the legal guardians' or students' refusal to participate.

Data Analysis

Statistical analyses were performed with the Statistical Package for the Social Sciences (SPSS) program version 25, and EPIDAT (3.1). The following analyses were carried out: (1) frequencies, measures of central tendency, and dispersion of the measure; (2) χ^2 to contrast proportions and adjusted residuals (ASR) (99% confidence interval [CI]); 3) *t*-tests for independent samples and Cohen's *d* to calculate effect size; 4) Pearson correlations with a 95% CI; 5) prevalence ratio (PR); 6) analysis of variance with post-hoc Bonferroni comparisons, and eta squared effect sizes. Due to the many comparisons and to limit type 1 error, only values equal to or less than $p \leq .001$ were considered statistically significant.

Results

Prevalence and Total Scores of Solicitation and Sexualized Interactions by Age and Sex

Considering conjointly sexual solicitation and interaction of minors with adults, the prevalence was 14.4% ($n = 513$). MA (14-15 years) presented a significantly higher percentage than EA (10-13 years), 8.8% ($n = 314$) and 5.6% ($n = 199$), respectively, $\chi^2_{(1, 3552)} = 111.340, p < .001$. In addition, girls presented a higher percentage (9.2%, $n = 326$) than boys (5.3%, $n = 187$) of these types of online victimization, $\chi^2_{(1, 3552)} = 28.146, p < .001$. Analysis of standardized

Table 1. Prevalence of Minor Victims of Sexual Solicitation and Sexualized Interactions with Adults according to Sex and Age

Type of victimization/age range/sex	12-13 years old Early Adolescence			14-15 years old Middle Adolescence		
	Total <i>f</i> (%)	Boys <i>f</i> (%)	Girls <i>f</i> (%)	Total <i>f</i> (%)	Boys <i>f</i> (%)	Girls <i>f</i> (%)
Sexual solicitation	169 (7.9)	63 (2.9)	106 (5)	279 (19.6)	85 (6)	194 (13.6)
An adult asked me for pictures or videos of myself with sexual content	92 (4.3)	26 (1.2)	66 (3.1)	159 (11.1)	31 (2.1)	128 (9.0)
An adult asked me questions about explicit sexual content	103 (4.8)	40 (1.9)	63 (2.9)	189 (13.2)	51 (3.6)	138 (9.7)
I have been asked to have cybersex with an adult (e.g., via a webcam)	44 (2.2)	22 (1.1)	22 (1.1)	82 (5.8)	28 (2.0)	54 (3.8)
An adult asked me over the Internet to have offline sex	68 (3.2)	29 (1.4)	39 (1.8)	119 (8.3)	32 (2.2)	87 (6.1)
An adult sent me photos or videos of himself/ herself with sexual content	95 (4.4)	40 (1.9)	55 (2.6)	180 (12.6)	58 (4.1)	122 (8.5)
Sexualized interactions	85 (4.0)	46 (2.2)	39 (1.8)	145 (10.2)	59 (4.2)	86 (6.0)
I have sent an adult photos or videos with sexual content of me	35 (1.6)	20 (0.9)	15 (0.7)	34 (2.4)	20 (1.4)	14 (1.0)
I have maintained a flirtatious relationship with an adult online	45 (2.1)	21 (1.0)	24 (1.1)	71 (5)	24 (1.7)	47 (3.3)
I talked about sexual things with an adult on the Internet	51 (2.4)	28 (1.3)	23 (1.1)	91 (6.4)	38 (2.7)	53 (3.7)
I've met an adult in person whom I previously met on the Internet	32 (1.5)	19 (0.9)	13 (0.6)	52 (3.6)	27 (1.9)	25 (1.7)
We have met offline to have sexual contact	33 (1.5)	24 (1.1)	9 (0.4)	32 (2.2)	22 (1.5)	10 (0.7)

Note. *f* = frequency; % = percentage. The percentages are calculated based on the total sample ($n = 3,578$).

Table 2. Pearson's Bivariate Correlations between Sexual Solicitation and Sexualized Interactions with Adults with Cyberbullying Victimization and Cyber Dating Abuse Based on Age and Sex

Age range	1.	2.	3.	4.
Early adolescence (10-13 years)				
1. Sexual solicitation	—	.76** [.74, .78]	.45** [.41, .50]	.49** [.40, .57]
2. Sexualized interactions	.62** [.58, .66]	—	.39** [.35, .44]	.46** [.37, .55]
3. Cybervictimization	.29** [.23, .35]	.28** [.22, .34]	—	.59** [.51, .66]
4. Cyber dating abuse	.33** [.23, .42]	.40** [.31, .49]	.47** [.38, .55]	—
Middle adolescence (14-15 years)				
Sex				
Girls				
1. Sexual solicitation	—	.57** [.53, .61]	.35** [.30, .41]	.38** [.28, .47]
2. Sexualized interactions	.83** [.81, .85]	—	.29** [.24, .34]	.42** [.32, .51]
3. Cybervictimization	.38** [.33, .44]	.39** [.34, .45]	—	.51** [.42, .58]
4. Cyber dating abuse	.41** [.32, .50]	.46** [.36, .54]	.54** [.45, .61]	—
Boys				

Note. α = Cronbach alpha; confidence intervals below and above 99%. The upper diagonals are, respectively, early adolescence and girls and the lower diagonals middle adolescence and boys.

** $p < .001$.

residuals revealed a significantly higher proportion of female MA victims.

Table 1 shows the prevalence of victimization behaviors due to sexual solicitation and sexualized interactions separately. Specifically, 12.6% ($n = 448$) of the adolescents received sexual requests from adults. There was a significant increase in prevalence between EA (4.7%, $n = 169$) and MA (7.8%, $n = 279$), $\chi^2_{(1, 3564)} = 105.836$, $p < .001$. Regarding sex, although in adolescents aged 10 to 13 years (EA), no significant differences were observed, $\chi^2_{(1, 2138)} = 7.790$, $p = .005$, in adolescents between 14 and 15 years of age (MA), there was a higher percentage of girls (13.6%, $n = 194$) than boys (6%, $n = 85$) who received sexual requests on the Internet from adults, $\chi^2_{(1, 1426)} = 38.314$, $p < .001$. The analysis of the standardized residuals revealed a significantly higher proportion of girls aged 14-15 (MA). On the other hand, 6.5% ($n = 230$) of the adolescents had sexualized interactions with adults on the Internet. A significantly higher percentage was observed in MA (4.1%, $n = 145$) than in EA (2.4%, $n = 85$), $\chi^2_{(1, 3562)} = 54.081$, $p < .001$. With respect to the sex, no differences were observed between boys and girls in the prevalence of sexualized online interactions with adults, $\chi^2_{(1, 3562)} = .243$, $p = .633$.

Concerning total scores, significant age differences were observed in sexual solicitation and sexualized interactions with adults ($t = -9.70$, $p < .001$, $d = -0.41$; $t = -6.82$, $p < .001$, $d = -0.24$, respectively) with a higher mean score in MA. Although there were no significant sex differences in sexualized interactions with adults ($t = -0.493$, $p = .622$), there were significant differences in sexual solicitation, $\chi^2_{(1, 3562)} = 54.081$, $p < .001$, with girls scoring higher.

Relationship and Association between Solicitation and Sexualized Interactions of Minors with Adults and Other Forms of Cybervictimization

Sexual solicitation of minors by adults correlated significantly with peer cybervictimization ($r = .37$ [.33, .40]) and victimization by cyber dating abuse ($r = .40$ [.36, .43]). In turn, the variable sexualized interactions with adults also correlated with these two types of online victimization ($r = .34$ [.31, .38]; $r = .43$ [.39, .46], respectively). Table 2 shows the correlations according to sex and the stage of adolescence.

The association between solicitation and/or sexual interaction presented a PR = 2.64 [2.37, 2.94] with peer cybervictimization and a PR = 2.31 [1.94, 2.76] with victimization by cyber dating abuse. That is, in the total sample of the victims who admitted receiving requests

and/or interacting sexually with adults on the Internet, reporting being cybervictimized by their peers was 2.64 more prevalent, and presenting cyber dating abuse was 2.31 times more prevalent.

Depending on sex, for boys who reported receiving solicitations and/or sexually interacting with an adult, the PR was 2.96 [2.49, 3.52] for cybervictimization and PR = 2.48 [1.85, 3.32] for cyber dating abuse. In girls, the results showed that those who reported solicitation or sexual interaction with adults had a PR = 2.40 [2.08, 2.77] for cybervictimization and a PR = 2.03 [1.62, 2.53] for cyber dating abuse. Regarding the age range, the EAs who presented this form of victimization with adults had a PR = 2.87 [2.44, 3.36] for cybervictimization and a PR = 2.80 [2.11, 3.71] for cyber dating abuse. In MA, the association between solicitation and/or sexual interaction and peer cybervictimization with cyber dating abuse was PR = 2.35 [2.02, 2.75] and PR = 1.93 [1.55, 2.42]. These results highlight that by both sex and age group, minors who received solicitations or interacted with an adult on the Internet had approximately twice the prevalence of cybervictimization or cyber dating abuse.

Overlapping Forms of Online Victimization in Minors

Table 3 shows the percentage of overlap between sexual solicitation and sexualized interaction with adults with other types of online victimization. Thus, 33.9% ($n = 1,216$) were involved in some form of online victimization. Specifically, in addition to being cybervictimized by their peer group, 4.7% ($n = 169$) of the minors received requests and/or had sexualized interactions with adults. On the other hand, 1.2% ($n = 44$) of the adolescents were victims of solicitation and/or sexualized interaction with adults at the same time as they were victims of cyber dating abuse. Considering the overlap of these three forms of online victimization, 2.7% ($n = 98$) of the minors were victims of all the different kinds of online victimization. In addition, a higher percentage of victims was observed in MA than in EA, $\chi^2_{(7, 3577)} = 147.795$, $p < .001$. Also, the percentage of girls was higher than that of boys in these types of online victimization, $\chi^2_{(7, 3577)} = 38.054$, $p < .001$.

Differences in Health-Related Quality of Life by Categories of Victims of Overlap of Online Victimization

Table 4 compares categories of victims based on the type of overlap of online victimization received. These analyses consider the differences of these categories of victims in the total sample,

Table 3. Overlap between Solicitation and Sexualized Interactions with Adults and other Types of Online Victimization (Cybervictimization and Cyber Dating Abuse)

f (%)	Non Victims	One kind of online victimization			Two kinds of online victimization			Three kinds of online victimization
		SOL/INT	CB	CDA	SOL/INT+CB	SOL/INT+CDA	CB+CDA	SOL/INT+CB+CDA
Total sample	2361 (66.1%)	202 (5.6%)	529 (14.8%)	97 (2.7%)	169 (4.7%)	44 (1.2%)	77 (2.2%)	98 (2.7%)
Early adolescence	1546 (72.1%)	79 (3.7%)	325 (15.1%)	39 (1.8%)	69 (3.2%)	14 (0.7%)	37 (1.7%)	37 (1.7%)
Middle adolescence	815 (56.8%)	123 (8.6%)	204 (14.3%)	58 (4.1%)	100 (7%)	30 (2.1%)	40 (2.8%)	61 (4.3%)
Boys	1182 (69.9%)	76 (4.5%)	244 (14.4%)	51 (3%)	66 (3.9%)	12 (0.7%)	29 (1.7%)	33 (1.9%)
Girls	1179 (62.6%)	126 (6.7%)	285 (15.1%)	46 (2.4%)	103 (5.5%)	32 (1.7%)	48 (2.5%)	65 (3.5%)

Note. f: frequency; % = percentage. The percentages are calculated based on the total sample (n = 3,578). SOL/INT = solicitation or sexual interaction with an adult; CB = cybervictimization; CDA = cyber dating abuse.

Table 4. Differences in KIDSCREEN-10 Depending on the Type of Overlap with Online Victimization

Type of Victimization	Total		Boys		Girls		Early adolescence		Middle adolescence	
	M	SD	M	SD	M	SD	M	SD	M	SD
Non-victims ^a	48.85	(8.38)	49.59	(8.35)	48.11	(8.35)	49.68	(8.59)	47.28	(7.75)
SOL/INT ^b	44.65	(7.71)	46.01	(7.92)	43.82	(7.50)	45.29	(8.02)	44.24	(7.51)
CB ^c	44.55	(7.94)	46.02	(7.72)	43.29	(7.92)	45.03	(8.34)	43.77	(7.20)
CDA ^d	44.83	(7.38)	45.52	(7.74)	44.06	(6.95)	45.89	(7.00)	44.11	(7.59)
SOL/INT+CB ^e	41.38	(7.83)	42.22	(8.91)	40.85	(7.06)	40.24	(8.70)	42.17	(7.12)
SOL/INT+CDA ^f	43.09	(7.64)	45.17	(10.34)	42.31	(6.38)	43.78	(8.03)	42.77	(7.57)
CB+CDA ^g	43.57	(6.40)	44.13	(6.26)	43.23	(6.52)	44.83	(5.64)	42.41	(6.90)
SOL/INT+CB+CDA ^h	39.95	(7.90)	42.29	(8.18)	38.76	(7.54)	40.17	(8.49)	39.81	(7.58)
F (p <)	F _(7,3576) = 52.57 p < .001 η ² = .093		F _(7,1692) = 17.42 p < .001 η ² = .067		F _(7,1883) = 33.27 p < .001 η ² = .110		F _(7,2145) = 29.80 p < .001 η ² = .089		F _(7,1430) = 17.92 p < .001 η ² = .081	
Post hoc	a > b, c, d, e, h b > h / c > e, h / d > h		a > c, e, h		a > b, c, e, g, h b > h; c > h		a > b, c, e, h c > e		a > b, c, e, g, h	

Note. M = arithmetic mean; SD = standard deviation; p = significance; F = Fisher's F; η² = eta squared; post hoc: Bonferroni post-hoc test. SOL/INT = solicitation or sexual interaction with an adult; CB = cybervictimization; CDA = cyber dating abuse.

but also according to sex and age group. It can be observed that nonvictims had adequate HQRoL scores (values close to the reference standards for the Spanish population aged 12-18 years: M = 50, SD = 10). In addition, victims who presented all three forms of online victimization simultaneously (sexualized solicitation and interactions with adults, peer cybervictimization, and cyber dating abuse) tended to have lower HQRoL scores, with MA girls obtaining the worst scores.

Discussion

The present study provides novel findings about the association and overlap of sexual solicitations and/or interactions of adults with minors and other forms of online victimization (peer cybervictimization and cyber dating abuse). It is also interesting to see how the joint overlap of these problems deteriorates HRQoL. Likewise, the study adds evidence of the prevalence of solicitation and sexualized interactions according to the stage of adolescence and sex in the Spanish context, with a large sample of participants under 16 years of age.

Regarding the first objective, and in response to the research question posed, the results indicate a prevalence of 12.6% of sexual solicitation, and of 6.4% of sexualized interactions with adults, in line with the prevalences obtained in previous studies (Andrade et al., 2021; de Santisteban & Gámez-Guadix, 2017; Longobardi et al., 2021). The longitudinal study by Ortega-Barón et al. (2022) indicates a period prevalence of 23%, with point prevalences ranging from 11.3 to 6.1% for solicitations and between 4.8 and 7.1% for interactions in each of the three waves of the study, which is also related to these data. However, the sexual solicitation data in this study are slightly higher than those obtained by the meta-analysis of Madigan et al.

(2018). The differences between the prevalences found in studies are due to the difficulty of conceptualizing and measuring these types of online sexual victimization with adults in minors, the different sociocultural contexts in which the studies were carried out (Bennett & O'Donohue, 2014), and the increase of this problem associated with the pandemic (Interpol, 2020). These results contribute to our knowledge of the prevalence of this problem in minors in the Spanish context, through a validated and widely used instrument, which allows the prevalence to be compared with other studies.

Concerning sex differences, we observed that it is more frequent for girls to receive sexual requests from an adult, especially in those aged 14-15 years. In this regard, numerous studies also show greater sexual solicitation in girls (Gámez-Guadix, De Santisteban, et al., 2021; Montiel et al., 2016; Wurtele & Kenny, 2017). One possible explanation is that the aggressors are mostly heterosexual males (de Santisteban et al., 2018). On the other hand, regarding age, there was a significant increase from 12-13 years to 14-15 years, and this is consistent with previous studies indicating that as age increases, so do these online sexually abusive behaviors (Andrade et al., 2021; Calvete et al., 2021; Montiel et al., 2016; Ortega-Barón et al., 2022). Although Joleby et al. (2021) place the highest prevalence at younger ages (13 years), at older ages minors have a greater use of the Internet, interact more with strangers (Andrade et al., 2021), and have more experience and interest in sexual relations (Rodríguez-Carrión & Traverso-Blanco, 2012).

Concerning the second objective, solicitation and sexualized interactions with adults correlate significantly with peer cybervictimization and cyber dating abuse, so the working hypothesis is confirmed. Along these lines, other cross-sectional (Mladenović et al., 2022; Montiel et al., 2016) and longitudinal (Calvete et al., 2021; Gámez-Guadix & Mateos-Pérez, 2019) studies also show the relationship between these kinds of online victimization.

An interesting aspect of this study is that minors who received solicitations and/or who had sexualized interactions with adults have twice the prevalence of problems of peer cybervictimization or cyber dating abuse compared to adolescents who had not had these sexual experiences with adults on the Internet. This result emphasizes the importance of understanding the complexity of the current context in which minors are exposed to many risks on the Internet simultaneously, and sometimes they suffer different forms of online victimization conjointly (Machimbarrena et al., 2018; Ortega-Barón et al., 2021). Hence, it would be appropriate for future research and prevention and intervention programs to emphasize the relationship and overlap of different cyber risks in childhood and adolescence. In this sense, the Safety.net prevention program conceives the joint prevention of eight Internet risks in children and adolescents (including those addressed in this study) (Ortega-Barón et al., 2021).

Regarding the third objective and the research question posed, we note the overlap between the forms of online victimization. As previously stated, the online risks that young people face are not isolated problems but overlapping and interconnected; therefore, it is important to consider online risks holistically rather than addressing them as isolated problems (Smahel et al., 2020). According to the concept of polyvictimization, the most widespread victimization experiences tend to accumulate in certain individuals and in certain settings of online violence (González-Cabrera, Machimbarrena, et al., 2021). The prevalence of triple polyvictimization revealed in this study is lower (2.7%) than that of the study of Machimbarrena et al. (2018). A possible explanation for this result is that the sample of our study is limited to minors between 10-15 years according to the ages specified by Spanish legislation as a crime (LO 1/2015). If the study were extended to children between 16 and 17 years of age, the percentage might be higher. However, this data should not be underestimated because it is extremely serious for such young children to be simultaneously experiencing three manifestations of online victimization. In turn, it is striking that 23.1% of the minors had experienced one of the three forms of online victimization (5.6% solicitation and sexualized interaction with adults, 14.8% cybervictimization, and 2.7% cyber dating abuse). Although these specific data do not indicate any type of overlap, they show the magnitude of the problems to which minors are exposed. In addition, different studies show that solicitation and sexualized interaction with adults (Ortega-Barón et al., 2022), peer cybervictimization (Gao et al., 2021), and cyber dating abuse (Ortega-Barón et al., 2020) can be prolonged over time, generating stable victims.

Finally, concerning the fourth objective, the results of the present study confirmed the second hypothesis; minors who were victims of all three risks simultaneously had lower HRQoL scores than those who did not present problems or only presented one. The uniqueness of this study is that it is evident that broader experiences of victimization tend to accumulate for certain individuals in the online context and that this affects their quality of life (González-Cabrera, Machimbarrena et al., 2021). Following this idea, González-Cabrera, Machimbarrena et al. (2021) indicate that the accumulation of three or more Internet risks is related to a lower HRQoL score than in those who do not present online risks. These results show that the reality of this issue is complex and confirm that, given the coexistence of multiple risks, minors are especially vulnerable when they experience various types of online victimization (Ortega-Barón et al., 2021). In this sense, future interventions should place particular focus on those adolescents who present several problems simultaneously in order to provide them with appropriately specialized support.

This study has some limitations that should be considered. First, the evaluation instruments used self-reports, so biases (including social desirability bias) may exist. Second, this study used a cross-sectional design that considered only some kinds of online victimization (peer cybervictimization and cyber dating abuse). It

would be appropriate for future studies to include other variables, such as web applications in which minors receive this type of request or interact with adults, to better understand this problem and be able to prevent it. Third, this study categorized the overall sample ($n = 3,578$) according to the type of online victimization, the overlap between these problems, age range, and sex. This way of analyzing the data, taking into account so many variables together, led to the creation of exclusion categories with rather small individual cell samples (Table 3), therefore, this should be considered when interpreting the results. Fourth, the study sample consisted of only Spanish participants; despite the size of the sample, it is not representative of the Spanish adolescent population as a whole. However, considering that there is an increase in Internet use worldwide as well as a higher prevalence of online problems among minors (Andrade et al., 2021), this study sets the guidelines for future research to investigate the magnitude and overlap of the primary forms of online victimization in other cultures. Specifically, in studies of solicitation of minors and sexualized interaction with minors by adults, it is crucial to delimit the cultural context of the studies according to the existing laws and protocols of action.

Despite these limitations, this study provides noteworthy findings regarding the prevalence of the cybervictimization of adolescents by different people at the same time (their peers, their intimate partner, and adults). The importance of presenting insight into the possible overlaps of online victimization and that polyvictimized minors are those with the poorest HRQoL are in line with theoretical models of cumulative risk. The results of the present study confirm that in the online context, when a person experiences several problems simultaneously, the propensity to develop psychological problems also increases (Evans et al., 2013; Li et al., 2016). In recent decades, online risk prevention and intervention programs for adolescents have focused on assessing a single risk, such as cyberbullying (del Rey et al., 2012; Williford et al., 2013), and included some content about sexting or online grooming (Garraigordobil & Martínez-Valderrey, 2014; Ortega-Barón et al., 2019). Considering that our results show an overlap between online problems in adolescence, the present study helps us to understand the severity of the issue from a multifaceted perspective and demonstrates the need for multi-risk prevention and intervention programs that consider the different online problems that affect the quality of life and health of our minors in a global and joint manner (Ortega-Barón et al., 2022). We suggest that future prevention programs should not focus on a specific risk but, rather, on the risks of the Internet in a relational way (i.e., on a combination of risks, including cyber-violence among peers [cyberbullying], cyber-violence in the romantic sphere [online abuse in couples], and sexual solicitation of/interaction with minors by adults [online grooming]). Additionally, although not included in this study (consensual, non-consensual, and coercive) sexting could be considered another self-exposure risk of interest. Finally, the design of these programs should have a common module on the elements shared by these risks—a design in which all of them are equally relevant and the prevention of one could help the prevention of the others.

In conclusion, the present study provides data on the prevalence of solicitations and sexualized interactions of adults with minors in early and middle adolescence. In addition, the study reveals the relationship and overlap of these forms of online sexual victimization and peer cybervictimization, and cyber dating abuse, and how people who conjointly present the three types of online victimization present lower HRQoL than those who are not victims or who only present one problem

Conflict of Interest

The authors of this article declare no conflict of interest.

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